CLAIMS

Please replace the previously submitted claims with the following:

1-20. (Deleted)

21. (New) A system for automated temperature measurement, comprising:

a processor unit;

a temperature measurement diode;

an integrated circuit coupled to the diode and the processor unit, said integrated circuit comprising an analog-to-digital converter configured to sequentially digitize analog voltage signals provided by the diode; and

a current source coupled to the diode and configured to generate a first current and a second current different from said first current; wherein

said processor unit is coupled to the current source and to the analog-to-digital converter, said processor unit configured

to control the current source such that the current source applies the first current to the diode at a first point in time and applies the second current to the diode at a second point in time,

to obtain a digital measure of a first voltage across the diode from the analog-to-digital converter when the first current is applied to the diode,

to obtain a digital measure of a second voltage across the diode from the analog-to-digital converter when the second current is applied to the diode, and

to determine a temperature proximate to the diode based on the first and second digital measures.

22. (New) The system of claim 21, further comprising

a controller configured to host said processor unit.

23. (New) The system claim of 21, further comprising:

a binary processor configured to generate and output a binary signal corresponding to the determined temperature.

24. (New) The system of claim 22, further comprising:

an I/O module external to the controller and configured to couple the controller to the A/D converter and to the current source.

25. (New) The system of claim 24, wherein

the second processor unit is contained within the I/O module.

26. (New) The system of claim 21, further comprising:

a temperature unit configured to host the diode, the A/D converter, and the current source.

27. (New) The system of claim 22, further comprising:

an I/O module external to the controller and configured to host the A/D converter and the current source.

28. (New) A method for automated temperature measurement in a system, comprising:

controlling a current source such that the current source sequentially applies a first current to a diode at a first point in time and applies a second current to a diode at a second point in time;

measuring a first analog voltage across the diode when the first current is applied to the diode to produce a first analog voltage measurement;

measuring a second analog voltage across the diode when the second current is applied to the diode to produce a second analog voltage measurement;

sequentially digitizing the first and second analog voltage measurements in an integrated circuit comprising an analog-to-digital converter; and

determining a temperature proximate the diode based on the first and second digitized voltage measurements.

29. (New) A system for automated temperature measurement, comprising:

a temperature measurement diode;

a processor unit;

a current source;

means for controlling the current source such that the current source sequentially applies a first current to the diode at a first point in time and applies a second current to the diode at a second point in time, said means for controlling the current source being coupled to the controller and the current source;

means for measuring a first analog voltage across the diode when the first current is applied to the diode and for measuring a second analog voltage across the diode when the second current is applied to the diode;

means for sequentially digitizing the first and second analog voltage measurements with an integrated circuit; and

means for determining a temperature proximate the diode based on the first and second digitized voltage measurements.

30. (New) The system of claim 29, further comprising:

means for producing a binary output corresponding to the determined temperature.

31. (New) The system of claim 29, further comprising:

a controller configured to host the processor unit, the means for controlling the current source, and the means for determining a temperature.

32. (New) The system of claim 29, further comprising:

an I/O module external to the controller and configured to couple the controller to the current source.

33. (New) The system of claim 32, wherein

the I/O module is configured to host the means for determining the temperature.